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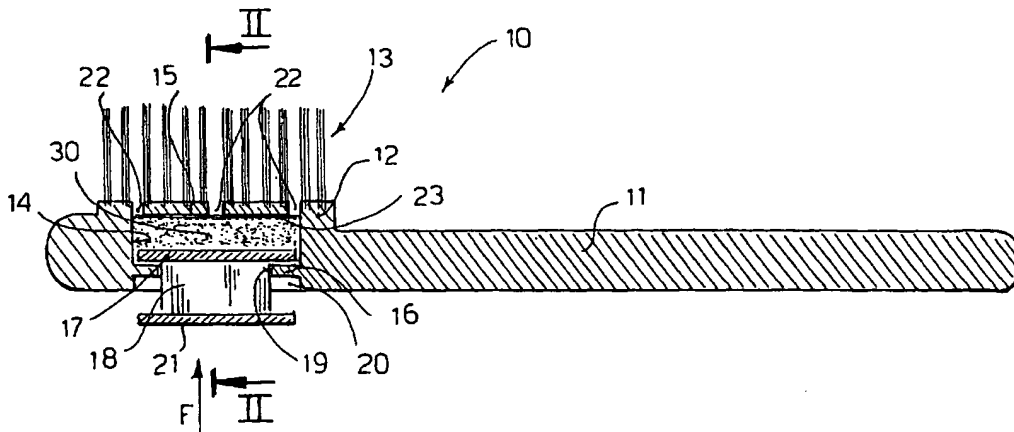
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- (74) Agents: PETRUZZIELLO, Aldo et al.; Racheli & C. S.P.A., Viale San Michele del Carso, 4, 1-20144 Milano (IT).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GI, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Declaration under Rule 4.17:
— of inventorship (Rule 4.17(iv)) for US only
- Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:
7 November 2002
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED TOOTHBRUSH



(57) Abstract: A toothbrush (10; 100; 200; 300) that includes a head (12; 312) supporting a set of bristles (13), a handle (11; 311) joint to the head (12; 312), a chamber (14; 114; 214; 314) made inside the head (12; 312) and/or inside the handle (11) and containing a dentifrice substance (30), at least one duct (22, 122, 222, 322) that communicates said chamber with the external face of the head (12; 312) supporting the set of bristles, and control means acting inside the chamber to push the dentifrice substance (30) so as to cause its discharge from the ducts to impregnate the set of bristles (13).



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 02/00634

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A46B1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 589 823 A (HENDRICKSON ORRIN W) 29 June 1971 (1971-06-29)	1-5
Y	the whole document	15
Y	US 3 952 867 A (MCCORD WILLIAM F) 27 April 1976 (1976-04-27)	15
Y	the whole document	
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A	the whole document	4, 5, 10, 11
X	US 4 844 641 A (GROSFILLEY JEAN-PIERRE ET AL) 4 July 1989 (1989-07-04)	1-3, 14
A	the whole document	4, 5
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Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search 17 September 2002	Date of mailing of the international search report 26/09/2002
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Triantaphillou, P
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INTERNATIONAL SEARCH REPORT

 International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AT 344 128 B (WASNER KURT A) 10 July 1978 (1978-07-10)	1,2,6-8, 10,11,14
Y	the whole document	15
Y	US 5 702 686 A (CALHOON CHRISTINA M ET AL) 30 December 1997 (1997-12-30)	15
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A		7,8,13, 14
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 02/00634

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 599 126 A (HOUGH CHERYL) 4 February 1997 (1997-02-04)	1,12
A	the whole document	13,14
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	the whole document	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 02/00634

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-5

Toothbrush with chamber containing dentifrice and piston acting transversely to the brush's long axis for expelling the dentifrice to the bristles.

2. Claims: 1,6-11

Toothbrush with chamber containing dentifrice and piston acting along the brush's long axis for expelling the dentifrice to the bristles.

3. Claims: 1,12,13

Toothbrush with chamber containing dentifrice and flexible bulb whose flexible membrane side is squeezed for expelling the dentifrice to the bristles.

4. Claims: 1,14

Toothbrush with chamber containing dentifrice and device for expelling the dentifrice to the bristles with breakable membrane blocking the passage of the dentifrice.

5. Claims: 1,15

Toothbrush with chamber containing dentifrice and device for expelling the dentifrice to the bristles where the dentifrice is of swallowable composition.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 02/00634

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